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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/324,304	06/02/1999	ZHENYU WANG	CASE2	1360

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06/19/2002

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EXAMINER

WILLIAMS, DEMETRIA A

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 06/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/324,304

Applicant(s)

WANG, ZHENYU

Examiner

Demetria A. Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,9,10,13,19-21,28 and 36 is/are rejected.
- 7) ☒ Claim(s) 2-8,11,12,14-18,22-27 and 29-35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 9 and 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: On page 7, line 7, "FIG. 8" is used to refer to the drawing of a known communication system. This should be changed to "FIG. 9" to correspond with the labeled drawings. On page 8, line 15, "FIG. 9" is used to refer to the drawing of a conventional channel modeling. This should be changed to "FIG. 10" to correspond with the labeled drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 19 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of the symbols " α " and "x" equations for Lmse and P0 render

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the claims indefinite as there is no explanation provided in the claims as to the meaning and use of these symbols.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claim 1, 20, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent Number 6,049,229 to Manohar et al ("Manohar" hereinafter). Manohar discloses a receiver and method for identifying a message based upon a received signal comprising a processor (column 3, lines 14-17; figure 4) that generates thresholds representing a range of possible message levels, therefore creating a constellation design, and a comparator for identifying the message by comparing the received signal to the generated thresholds (column 3, lines 9-19; figure 4).

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7. Claims 10 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Okunev et al.

Regarding claim 10, Okunev discloses a method of forming a constellation design by utilizing translation tables, said method comprising the steps of determining minimum and maximum thresholds representing a range of possible signal levels (column 3, lines 15-22) and calculating the distance between possible signal levels based upon the determined thresholds (column 3, lines 3-6; 22-24).

Regarding claim 13, Okunev discloses the method as described in reference to claim 10 and further including the steps of calculating a mean value for the range of signal levels and calculating the distance as a function of this mean value. In column 3, lines 17-20, Okunev discloses the computation of the mean value for a selected range defined by the upper and lower thresholds. Further, Okunev discloses in column 3, lines 20-24, the computation of the distance as a function of the mean value.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manohar in view of Okunev. Manohar discloses all of the elements as described above in reference to

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claims 1 and 21, but fails to mention the step of determining the distance between received signal levels. In modem receiver and constellation design, it is well known that robbed bits are problems that frequently occur and must be detected in order to ensure the correct message is being received. Okunev discloses a constellation design technique for PCM modem whereby the distance between adjacent signal levels is calculated in order to determine whether a slot has been subjected to robbed bits (column 3, lines 4-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Manohar to include the distance calculation as performed by Okunev in order to detect robbed bits.

Allowable Subject Matter

10. Claims 2-8, 11, 12, 14-18, 22-27, and 29-35 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 5 and 6, prior art of record fail to disclose the requirement that the probability of correctly receiving a selected signal exceeds a selected probability P_0 .

Regarding claims 2-5 and 22-24, prior art of record does not discloses the specifics of the relationships involved in determining the minimum and maximum thresholds.

Regarding claim 7, 8, 14 and 27, prior art of record does not rely on the formula presented by the applicant to calculate the distance between signal levels. Specifically, the level mean square error terms are not taught in prior art.

In reference to claim 11, 12, 32, and 33, prior art of record fails to disclose the calculation of a probability density function for each signal level.

Regarding claims 15, 16, 30, and 31, prior art of record does not teach determining whether the distance between adjacent signal levels is greater than a selected minimum value and making adjustments to ensure this condition is met.

Regarding claims 17 and 34, prior art of record does not disclose the use of training data for calculating the mean value as disclosed by the applicant.

Regarding claims 18 and 35, prior art of record does not teach the calculation of the standard mean square error.

Regarding claims 25 and 26, prior art of record does not include calculating a level mean square error for each message level.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura disclose a receiver and method for receiving a symbol and generating thresholds for use in determining the value of the received symbol. Bazes teaches a method and apparatus for generating first and second thresholds and using a comparator to compare signals to the generated thresholds.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Demetria A. Williams whose telephone number is (703) 305-4078. The examiner can normally be reached on Monday - Friday, 8:00 - 4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (703) 305-4378. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

daw
June 14, 2002


JEAN CORRIELLUS
PATENT EXAMINER

6-14-02